CHAPTER 9: WHAT DID WE LEARN ABOUT AIRPORT CAPACITY?

Introduction

In Phase II of the Long-Term Air Transportation Study (LATS), forecasts of future aviation activity at public use airports across Washington State were developed. These forecasts were compared with the existing capacity of the airport facilities that were calculated and presented in Phase I. Where capacity enhancement projects were identified in the airport's master plan and were programmed for development, existing capacity calculations were revised to reflect the increased capacity that will result from the improvement. From this comparison, the ability of the state's airports to meet the demand expected to be experienced was determined.

The forecasts represent unconstrained projections of future aviation activity at individual airports and were developed independently from existing or potential future capacity constraints at these airports. In some situations, capacity analysis along with other supporting data may indicate that the airport activity forecast cannot be accommodated at an individual airport.

Chapters 10, 11, 12, 13 and 14 in this report provide summaries of the airfield, passenger terminal, aircraft storage, air cargo and airspace demand capacity analyses results respectively. More detailed technical memoranda have also been prepared as part of the Phase II initiative to describe the process used to make the capacity determinations for each element; those reports are provided in the appendices.

Why Were the Capacity Analyses Prepared?

The forecasts of aviation demand indicate which airports are likely to experience increased demand in the future. While an assessment of the activity levels forecast for an airport helps in understanding the patterns of demand found in the system, a true measure of the adequacy of air transportation facilities is only possible through an assessment of the facility's capacity to handle the forecast traffic. Airport capacity is a measure of an airport's ability to serve demand. The objective of a capacity determination is to measure the ability of the existing airport components to accommodate both existing activity as well as future levels. By examining these forecasts relative to the capacity of the airports

themselves, we can assess whether the forecast activity levels can be accommodated and identify where actions may be required to avoid delay, congestion or other adverse impacts.

How Is Capacity Measured?

Airport activity forecasts were developed in Phase II to identify expected demand for aviation facilities in 2030. The forecasts examined commercial activity, general aviation activity, and air cargo. The capacity analysis compared these forecasts of future activity to existing airport facilities to determine the amount of existing system capacity likely to be utilized in 2030. Consistent with FAA methodology, a utilization rate of 60 percent signals the need to initiate planning for congestion relief; a utilization rate of 70 percent signals the need to implement congestion relief.

This analysis examined five elements of aviation system capacity:

- **Airfield Capacity:** the ability of an airport's runway system to accommodate take-offs and landings without experiencing delays.
- **Commercial Airline Passengers:** the ability of an airport terminal to accommodate airline passengers with adequate space for ticketing, security, etc.
- **Air Cargo:** the ability of an airport to accommodate processing of air cargo tonnage using existing facilities.
- **Aircraft Storage and Parking:** the ability of an airport to accommodate storage of based and transient aircraft in tie-downs and hangars.
- **Airspace System:** the ability of available airspace to safely accommodate aircraft in transit between airports.

What Does the Capacity Analysis Tell Us About the Viability of System Improvement Strategies?

Although the capacity of airports is measured through separate analyses of specific facilities (e.g., airside, passenger terminal, air cargo, aircraft storage), the fact is that all of these elements are interrelated at an airport. Increasing airfield demand is directly related to increasing demand on terminal, cargo, aircraft storage and other facilities. Consequently, improving the capacity of a single element such as the airfield can lead to increased demand for other, landside based facilities. Additionally, as

demand and capacity grow at individual airports, the strain on the system's airspace capacity also increases. Therefore, solutions proposed for addressing capacity deficiencies at an airport must give consideration to the full range of consequences that such an action may have on the capacity of the remaining facilities at the airport.

Similarly, when regional capacity issues are identified, it is important to remember that an airport that has excess capacity to accommodate increased operations will be attractive to all classes of system users. For instance, when considering where potential increases in passenger traffic can be accommodated within the state, it must be remembered that the same airports that have the physical components, locational attributes, and socioeconomic characteristics to attract commercial passenger traffic may also be in demand for other types of aviation activity such as general aviation. Therefore, when considering the potential of an airport to take on, for example, a commercial service role, it should be recognized that the same airport may also represent a desirable location for excess cargo and corporate general aviation activity that cannot be accommodated at other airports in the region. In some instances, it is likely that the capacity of the airport in question will not be sufficient to accommodate all classes of potential new demand.

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